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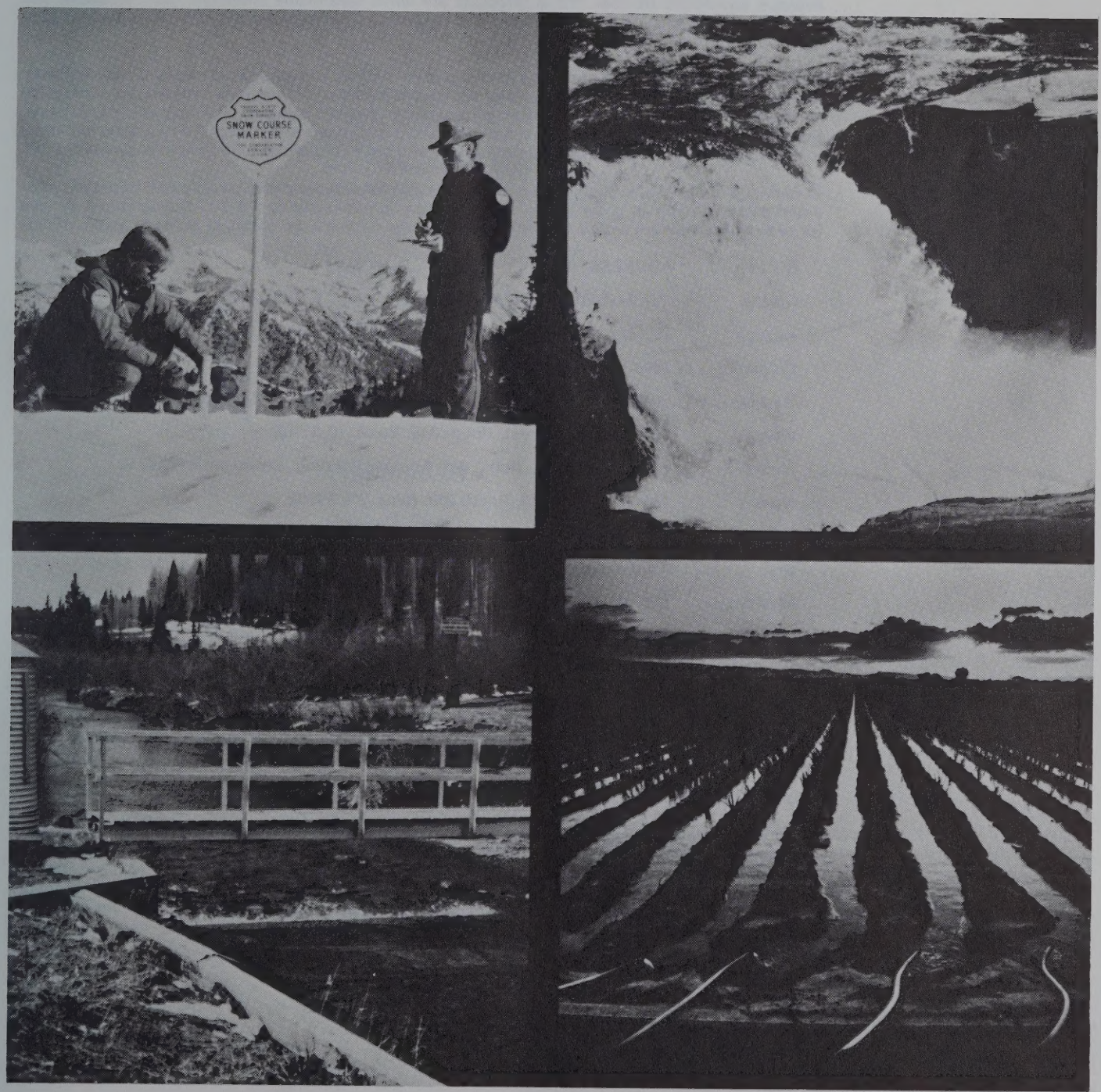
United States
Department of
Agriculture

**Soil
Conservation
Service**

**Bozeman,
Montana**

Montana Water Supply Outlook

January 1, 1988



Foreword

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are terms reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado	2490 West 26th Ave., Denver, CO 80211
New Mexico	517 Gold Ave. S.W., Room 3301, Albuquerque, NM 87102-3157
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	1201 Terminal Way, Room 219, Reno, NV 89502
Oregon	1220 Southwest 3rd Ave., Room 1640, Portland, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201-1080
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82601

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resouces, P.O. Box 388, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Environment Technical Services Division, 9820 106th St., Edmonton, Alberta T5K 2J6.

Montana
Water Supply Outlook

and

Federal – State – Private
Cooperative Snow Surveys

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Programs and assistance of the United States Department of Agriculture are available without regard to race, creed, color, sex, age, or national origin.

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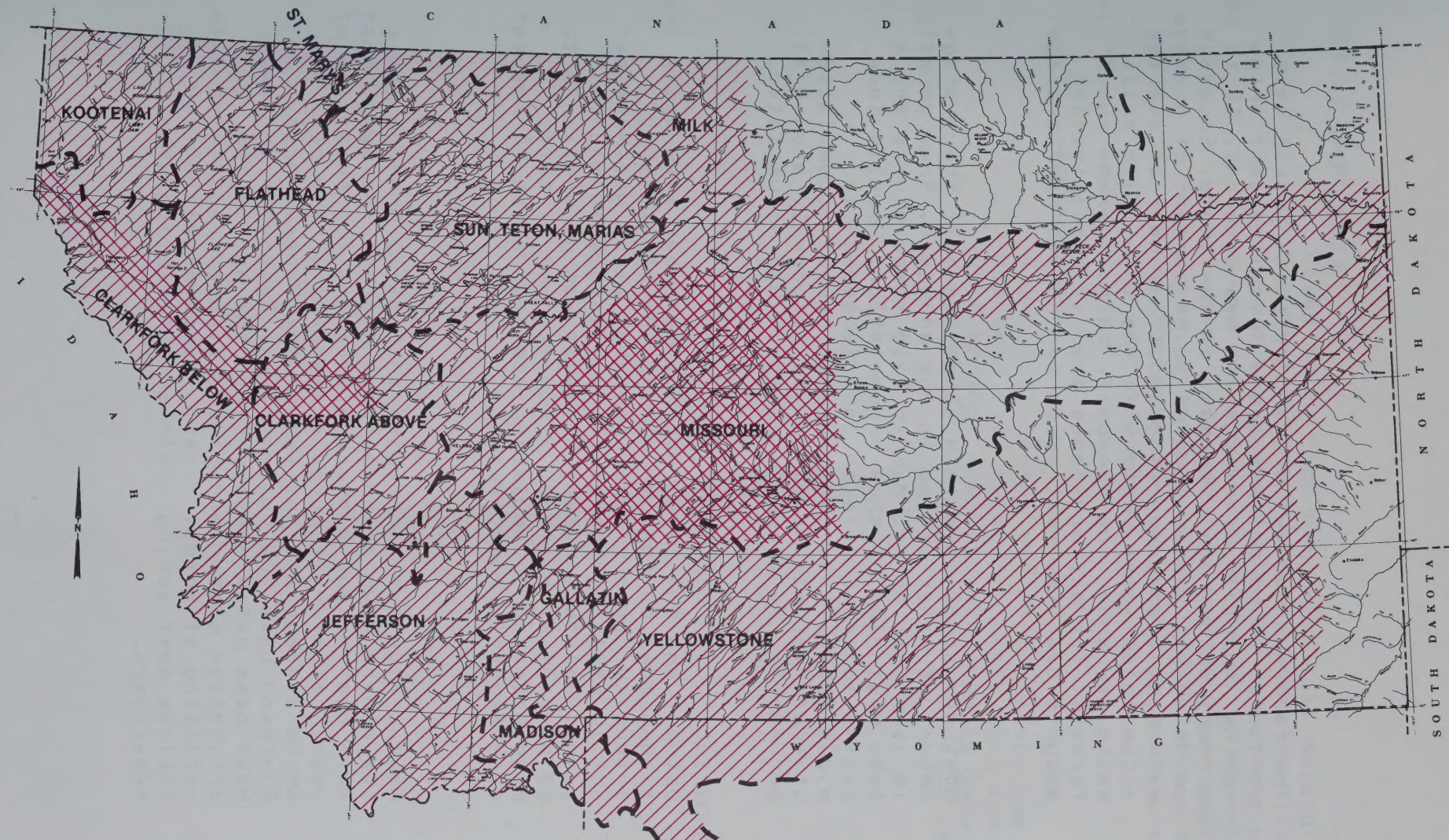
U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE



STREAMFLOW PROSPECTS FOR MONTANA

Spring and Summer Period

STREAM FLOW PROSPECTS

- MUCH ABOVE AVERAGE (over 130%)
- ABOVE AVERAGE (110-130%)
- NEAR AVERAGE (90-110%)
- BELOW AVERAGE (70-90%)
- MUCH BELOW AVERAGE (below 70%)
- NOT FORECAST

April-September Forecasts

January 1, 1988

0 25 50 75 100 MI

0 50 100 150 KM

SOURCE:
Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-R-39296

USDA SCS FORT WORTH, TEXAS 1985

GENERAL OUTLOOK

SUMMARY:

The fall started out dry and moisture levels have continued to be below average. Over the last three months, mountain precipitation has been only 50 to 60 percent of average over most of the state. Snowpack on January 1 varies from 35 to 65 percent of average with most areas reporting about one-half of average accumulated water content in the snow. With soils being dry under the snowpack, below average runoff is forecast for all drainages even if precipitation amounts over the next seven months are near average.

SNOWPACK:

Most drainages have only about one-half the average amount of water stored in the snowpack. Snow density is less than normal due to cold temperatures and a late beginning of snow accumulation. Usually snow begins to accumulate in late September to mid-October. This year in most areas, accumulation started near mid-November. By January 1, around 43 percent of the season's snowpack has accumulated.

PRECIPITATION:

October and the first half of November were quite dry across most Montana mountains. Precipitation intensity has increased somewhat since mid-November but is still not up to average levels in mountain areas. Moisture during December was generally 70 to 80 percent of average. Since October 1, total precipitation accumulation has been about 50 percent of average in most areas.

RESERVOIRS:

Most irrigation reservoirs in Central Montana and a few others have below average storage. However, most have near or above average storages for this time of year. Larger multipurpose reservoirs have near or above average storage except for Hungry Horse, Flathead Lake and Canyon Ferry. Reservoir inflows have been below average since the end of the irrigation season and have prevented reservoirs from refilling at normal rates. The prospects of low inflows next spring could impact filling some reservoirs.

STREAMFLOW:

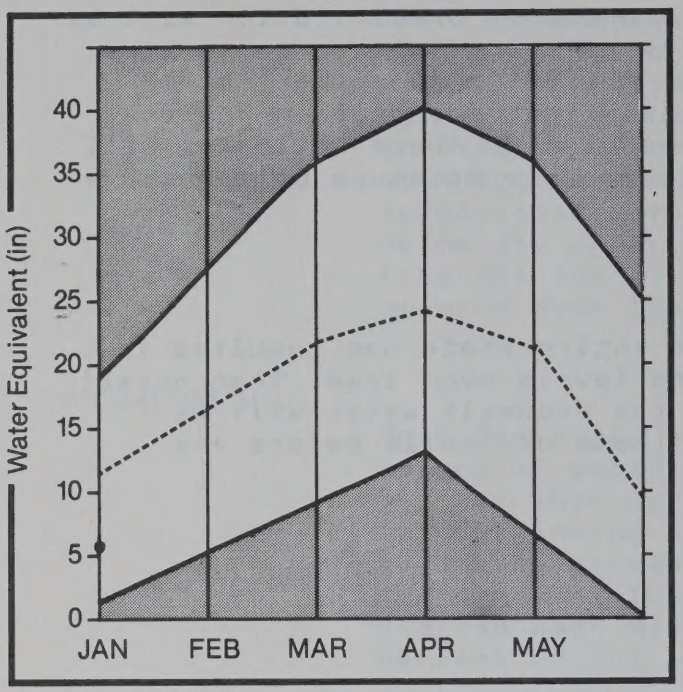
Based on current snowpack, soil moisture levels, and assuming that spring and summer precipitation will be near average, most forecasts indicate spring and summer runoff to be in the 65 to 85 percent of average range. Since less than one-half of the snow accumulation season has passed, these estimates will be significantly influenced by moisture patterns over the next few months.

SOIL MOISTURE:

A dry fall across the entire state has resulted in mountain soil moisture levels much lower than normal. Next spring, some of the snowmelt water will be required to recharge these dry soils before any runoff can occur.

Kootenai Basin

Mountain snowpack* (inches)



*Kootenai in Montana

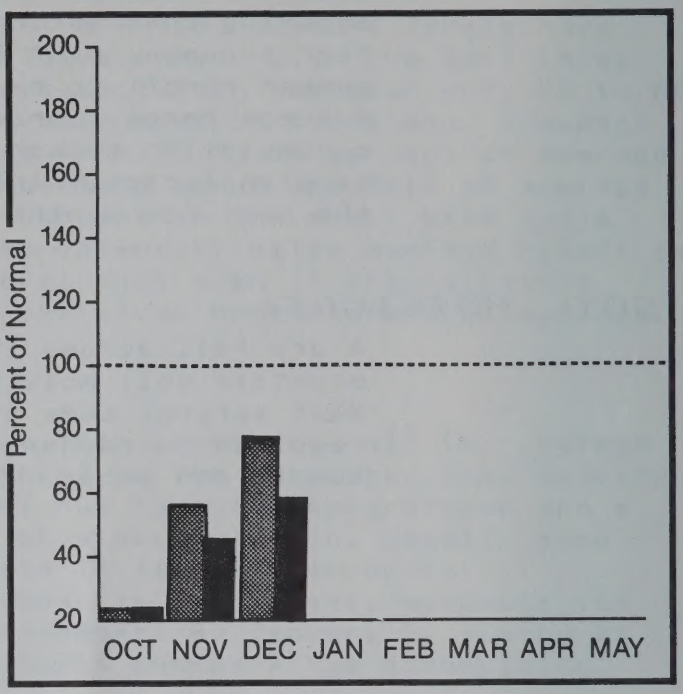
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation has been below average since October 1. However, December moisture was a little better. So far this season, the amount of snow water accumulated on mountain watersheds is about one-half of the average expected by this time of year. Soils under the snowpack are drier than normal. Spring and summer streamflows are forecast to be below normal even if precipitation is near average over the next seven months.

For more information contact your local Soil Conservation Service office.

KOOTENAI RIVER BASIN in Montana

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
KOOTENAI RIVER blw Libby Dam 2	APR-JUL	5885.0	4410.0	75	1766.0	30	2650.0	45
	APR-SEP	6903.0	5180.0	75	2071.0	30	3100.0	45
FISHER RIVER near Libby	APR-JUL	240.0	182.0	76	254.0	106	110.0	46
	APR-SEP	256.0	195.0	76	270.0	105	120.0	47
YAAK RIVER near Troy	APR-JUL	494.0	350.0	71	500.0	101	200.0	40
	APR-SEP	517.0	380.0	74	535.0	103	225.0	44
KOOTENAI RIVER at Leonia 2	APR-JUL	7340.0	5640.0	77	7910.0	108	3360.0	46
	APR-SEP	8441.0	6490.0	77	9100.0	108	3870.0	46

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE KOOCANUSA	5748.0	3114.0	3035.0	3255.0

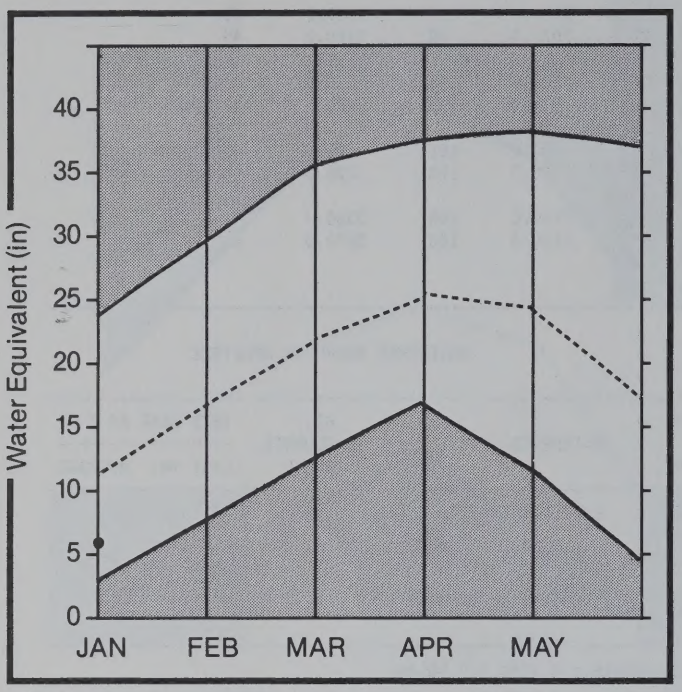
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
EAST KOOTENAI in B.C.	8	61	51
KOOTENAI in MONTANA	15	58	53
KOOTENAI ab BONNERS FERRY	22	59	52

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Flathead Basin

Mountain snowpack* (inches)



*Flathead

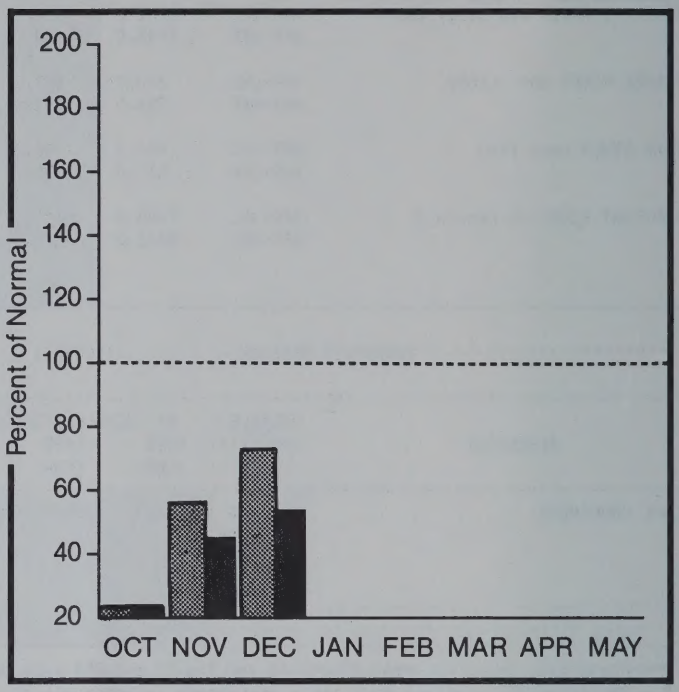
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Precipitation over the mountain watersheds has been below average for the past few months. Since October 1, the moisture has been only about one-half of average. December was a little better than previous months but only about 70 percent of average. Current snowpack has only one-half the amount of stored water normally expected by this time of year. Soils under the snow are drier than usual. Spring and summer streamflow is expected to be below average assuming mountain precipitation is near average over the next seven months.

For more information contact your local Soil Conservation Service office.

FLATHEAD RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
NF FLATHEAD near Columbia Falls	APR-JUL	1701.0	1210.0	71	1616.0	95	800.0	47
	APR-SEP	1880.0	1330.0	71	1780.0	95	880.0	47
MF FLATHEAD near West Glacier	APR-JUL	1680.0	1190.0	71	1885.0	112	750.0	45
	APR-SEP	1836.0	1520.0	83	2000.0	109	1040.0	57
SF FLATHEAD near Columbia Falls 1	APR-JUL	2110.0	1520.0	72	2356.0	112	930.0	44
	APR-SEP	2248.0	1620.0	72	2250.0	100	990.0	44
FLATHEAD at Columbia Falls 1	ARP-JUL	5621.0	3930.0	70	5280.0	94	2580.0	46
	APR-SEP	6114.0	4280.0	70	5750.0	94	2800.0	46
SWAN RIVER near Big Fork	APR-JUL	597.0	440.0	74	557.0	93	320.0	54
	APR-SEP	683.0	495.0	72	630.0	92	360.0	53
FLATHEAD RIVER near Polson 2	APR-JUL	6586.0	4600.0	70	5920.0	90	3250.0	49
	APR-SEP	7150.0	4900.0	69	6300.0	88	3450.0	48

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CAMAS (4)	45.2	14.4	21.2	19.2
MISSION VALLEY (8)	100.0	24.4	29.7	34.1
HUNGRY HORSE	3451.0	2039.0	2613.0	2649.0
FLATHEAD LAKE	1791.0	929.0	1099.0	1340.0

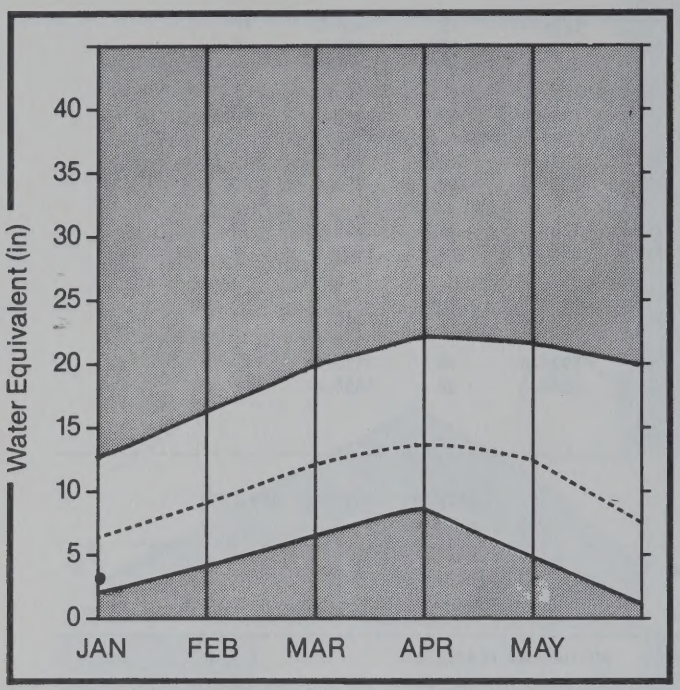
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
NORTH FORK FLATHEAD	9	54	50
MIDDLE FORK FLATHEAD	9	52	50
SOUTH FORK FLATHEAD	10	72	53
STILLWATER-WHITEFISH	3	86	54
SWAN	8	73	55
LITTLE BITTERROOT	4	84	53
FLATHEAD	32	60	52

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Clark Fork Basin above Missoula

Mountain snowpack* (inches)



*Clark Fork above Missoula

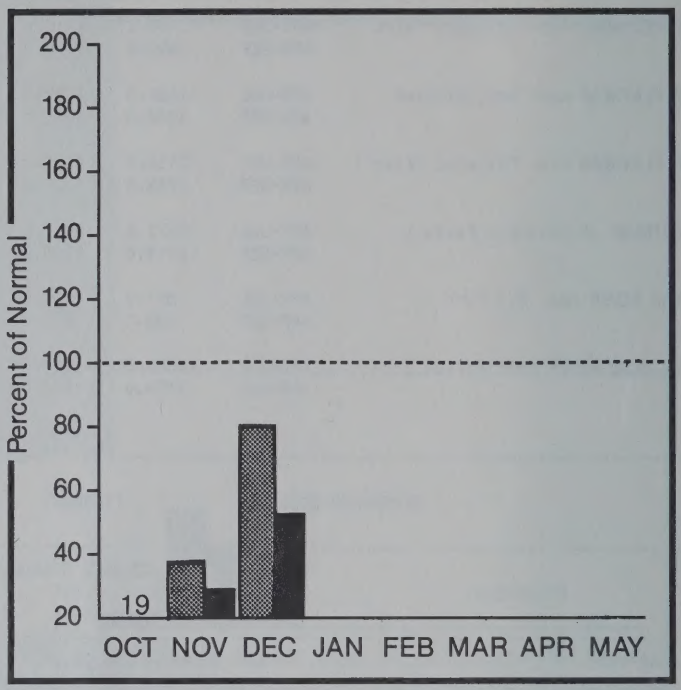
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation has been below average over the past three months. Since October 1, the total amount has been only about one-half of normal even though December amounts were about 80 percent of average. The amount of water stored in the snowpack is about 55 percent of average. Under the snowpack, soils are drier than usual. Streamflow forecasts for the spring and summer months are projected to be below average even if mountain precipitation is near average through July.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN above Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MOULTON RESERVOIR Inflow (MG)2	APR-JUN	237.0	165.0	70	173.0	73	95.0	40
	APR-JUL	263.0	185.0	70	189.0	72	105.0	40
WARM SPRINGS CR at Meyers Dam 2	APR-JUL	39.0	28.0	72	38.0	97	15.0	38
	APR-SEP	49.0	35.0	71	50.0	102	20.0	41
FLINT CREEK near Southern Cross 2	APR-JUL	14.8	11.6	78	18.0	122	6.0	41
	APR-SEP	17.8	13.6	76	21.0	118	6.0	34
FLINT CREEK below Boulder Creek 2	APR-JUL	61.0	45.0	74	69.0	113	20.0	33
	APR-SEP	78.0	57.0	73	88.0	113	25.0	32
LOWER WILLOW CR RES Inflow 2	APR-JUL	14.9	10.4	70	16.0	107	4.0	27
	APR-SEP	15.8	11.8	75	18.0	114	5.0	32
M. FK. ROCK CRK near Philipsburg	APR-JUL	69.0	51.0	74	76.0	110	30.0	43
	APR-SEP	77.0	57.0	74	80.0	104	35.0	45
NEVADA CREEK near Finn	APR-JUL	21.0	14.5	69	23.0	110	6.0	29
	APR-SEP	22.0	15.6	71	24.0	109	7.0	32
BLACKFOOT RIVER near Bonner	APR-JUL	874.0	590.0	68	826.0	95	400.0	46
	APR-SEP	969.0	650.0	67	865.0	89	435.0	45
CLARK FORK RIVER above Milltown 2	APR-JUL	703.0	480.0	68	817.0	116	225.0	32
	APR-SEP	812.0	560.0	69	850.0	105	270.0	33
CLARK FORK RIVER above Missoula	APR-JUL	1577.0	1070.0	68	1730.0	110	400.0	25
	APR-SEP	1781.0	1210.0	68	1960.0	110	450.0	25

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GEORGETOWN LAKE	31.0	26.2	30.0	28.2
LOWER WILLOW CREEK	4.9	1.2	1.1	1.3
NEVADA CREEK	12.6	1.3	---	3.9

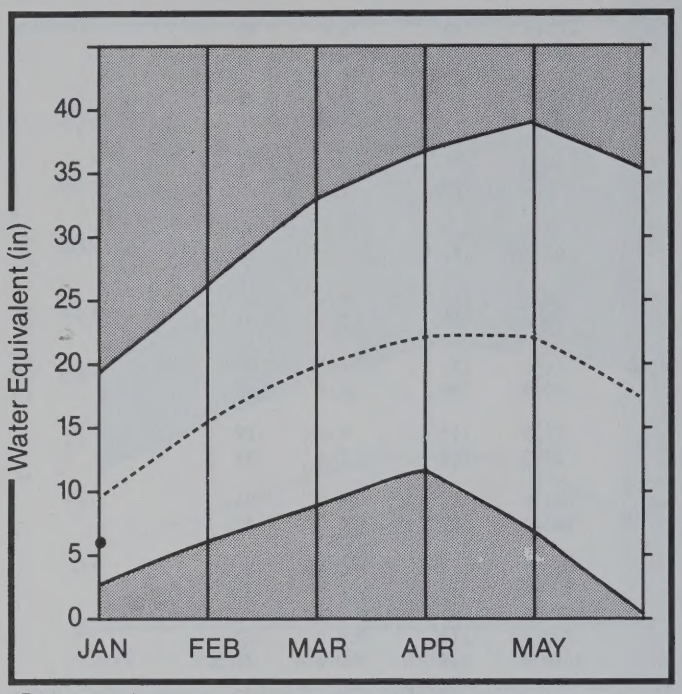
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK ab BLACKFOOT	31	73	54
BLACKFOOT	17	72	56
CLARK FORK above MISSOULA	43	74	55

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Clark Fork Basin below Missoula

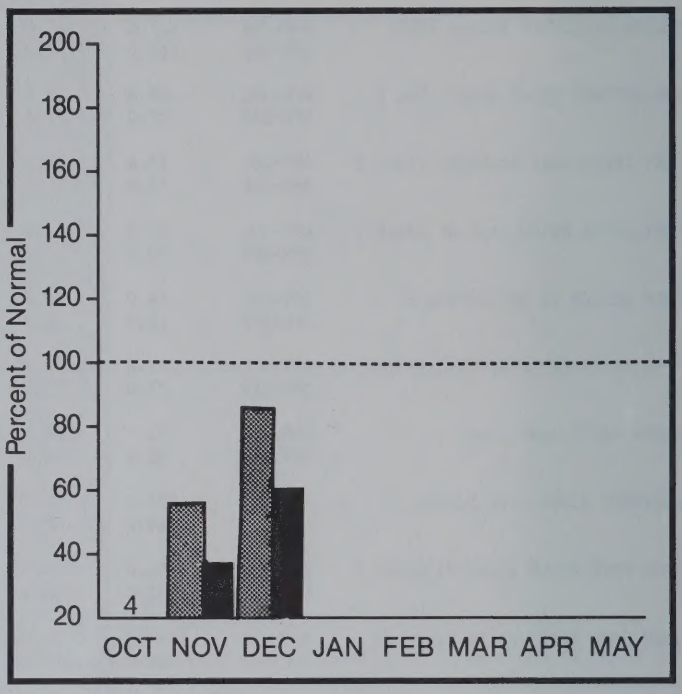
Mountain snowpack* (inches)



*Bitterroot

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Since October 1, the total amount of mountain precipitation is about 60 percent of average although December precipitation was about 85 percent of average. Mountain snowpack is about 65 percent of average in the Bitterroot River drainage and 55 percent of average in the Clark Fork above Missoula and in drainages downstream from the Bitterroot. Soils under the snowpack are drier than usual. Streamflows during the spring and summer months are forecast to be below average with near average precipitation over the next seven months.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN below Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
CLARK FORK RIVER above Missoula	APR-JUL	1577.0	1070.0	68	1730.0	110	400.0	25
	APR-SEP	1781.0	1210.0	68	1960.0	110	450.0	25
W.F. BITTERROOT RIVER nr Conner 2	APR-JUL	147.0	115.0	78	161.0	110	70.0	48
	APR-SEP	169.0	130.0	77	180.0	107	80.0	47
BITTERROOT RIVER near Darby	APR-JUL	524.0	410.0	78	585.0	112	250.0	48
	APR-SEP	573.0	445.0	78	615.0	107	270.0	47
SKALKAHO CREEK near Hamilton	APR-JUL	46.0	35.0	76	48.0	104	26.0	57
	APR-SEP	54.0	42.0	78	53.0	98	31.0	57
BURNT FORK CR nr Stevensville 2	APR-JUL	32.0	23.0	72	32.0	100	13.0	41
	APR-SEP	38.0	28.0	74	39.0	103	17.0	45
BITTERROOT RIVER at Missoula 2	APR-JUL	1371.0	960.0	70	1370.0	100	550.0	40
	APR-SEP	1497.0	1050.0	70	1500.0	100	600.0	40
CLARK FORK RIVER below Missoula	APR-JUL	2948.0	2030.0	69	2740.0	93	1320.0	45
	APR-SEP	3276.0	2260.0	69	3050.0	93	1470.0	45
CLARK FORK RIVER at St. Regis	APR-JUL	3894.0	2690.0	69	4480.0	115	900.0	23
	APR-SEP	4325.0	2990.0	69	4980.0	115	1000.0	23
CLARK FORK RIVER near Plains 2	APR-JUL	10850.0	7430.0	68	11700.0	108	3200.0	29
	APR-SEP	11930.0	8170.0	68	12800.0	107	3520.0	30
THOMPSON RIVER near Thompson Falls	APR-JUL	222.0	158.0	71	207.0	93	96.0	43
	APR-SEP	250.0	180.0	72	250.0	100	110.0	44
PROSPECT CREEK at Thompson Falls	APR-JUL	128.0	95.0	74	134.0	105	57.0	45
	APR-SEP	137.0	104.0	76	145.0	106	63.0	46
CLARK FORK at Whitehorse Rapids 2	APR-JUL	12150.0	8140.0	67	13000.0	107	3280.0	27
	APR-SEP	13370.0	8960.0	67	14300.0	107	3612.0	27

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
PAINTED ROCKS LAKE	31.7	0.0	---	16.5
NOXON RAPIDS	335.0	320.5	313.2	318.1
COMO	34.9	4.4	6.6	9.2

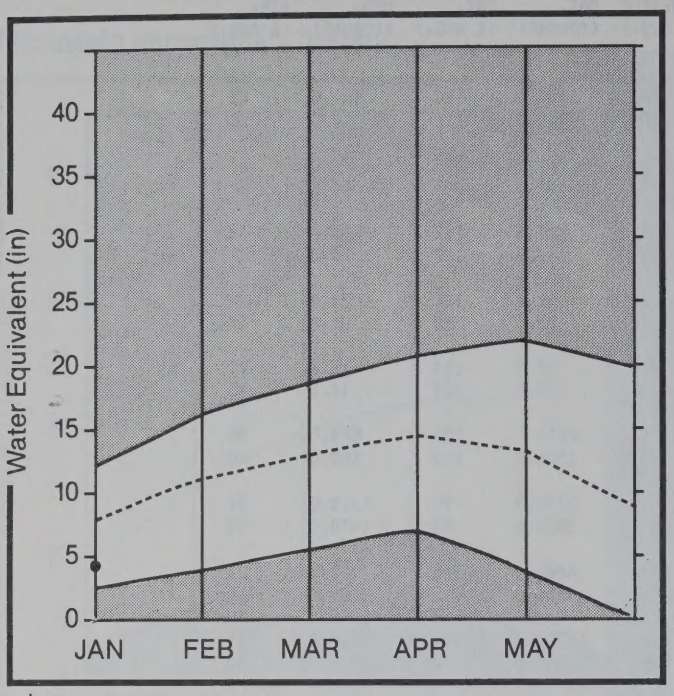
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK above MISSOULA	43	74	55
BITTERROOT	21	94	63
LWR CLARK FK blw MISSOULA	15	66	53
BITTERROOT & LWR C.F.	34	79	58
CLARK FORK TOTAL	73	76	56
FLATHEAD	32	60	52
PEND O'REILLE	100	69	54

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Jefferson Basin

Mountain snowpack* (inches)



*Jefferson

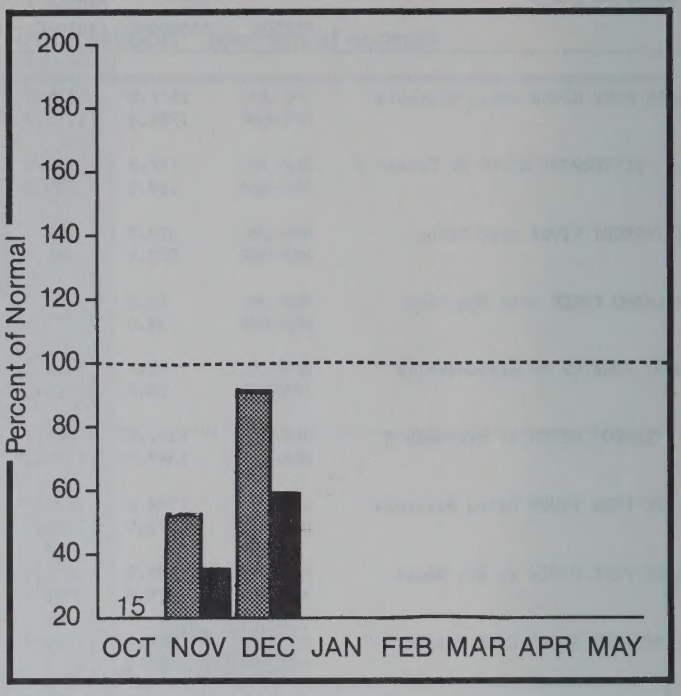
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation during December was about 90 percent of average. But since October 1, the total amount is only about 60 percent of average. Soils under the snowpack are drier than normal as a result of a dry fall. The snowpack is about 60 percent of average over most of the drainage. The Boulder River drainage is a little lower with snowpacks being about one-half of average. Streamflow during spring and summer months is forecast to be below average assuming near average precipitation over the next seven months.

For more information contact your local Soil Conservation Service office.

JEFFERSON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
RED ROCK RIVER near Monida 2	APR-JUL	105.0	80.0	76	122.0	116	38.0	36
	APR-SEP	114.0	86.0	75	132.0	116	40.0	35
BEAVERHEAD RIVER near Grant 2	APR-JUL	149.0	108.0	72	153.0	103	48.0	32
	APR-SEP	174.0	122.0	70	192.0	110	52.0	30
BEAVERHEAD RIVER at Barratts 2	APR-JUL	192.0	135.0	70	210.0	109	60.0	31
	APR-SEP	224.0	156.0	70	250.0	112	65.0	29
RUBY RIVER near Alder	APR-JUL	89.0	69.0	78	111.0	125	37.0	42
	APR-SEP	106.0	82.0	77	120.0	113	44.0	42
BIG HOLE RIVER near Melrose	APR-JUL	696.0	530.0	76	762.0	109	290.0	42
	APR-SEP	757.0	570.0	75	825.0	109	315.0	42
WILLOW CREEK near Harrison	APR-JUL	18.7	14.0	75	24.0	128	7.0	37
	APR-SEP	21.0	15.5	74	24.0	114	7.0	33

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LIMA	84.0	11.6	27.1	35.3
CLARK CANYON	255.6	162.6	161.0	142.2
RUBY RIVER	38.8	17.7	23.3	20.3

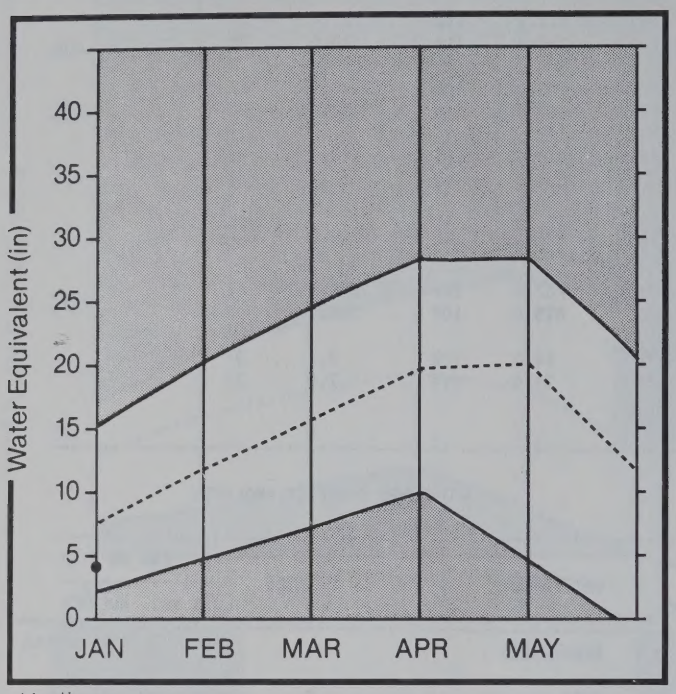
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
BEAVERHEAD	21	139	65
RUBY	4	83	61
BIGHOLE	18	90	61
BOULDER	10	61	50
JEFFERSON	44	102	61

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Madison Basin

Mountain snowpack* (inches)



*Madison

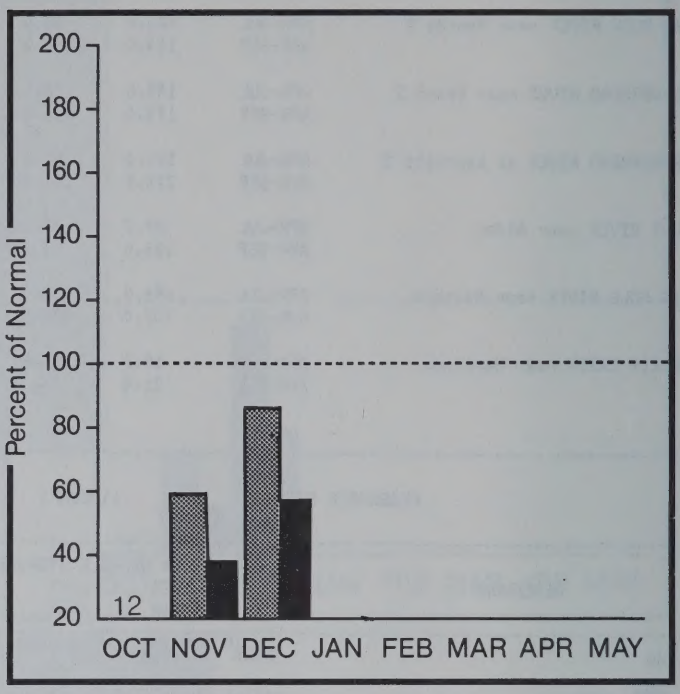
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Since October 1, the total amount of mountain precipitation is about 60 percent of average. December received more moisture than the past three months but was still only about 85 percent of average. Snowpack above Hebgen Lake is about 65 percent of average. While in the Madison, Gravelly and Tobacco Root Ranges, snow is about 55 percent of average. Under the snowpack, soils are drier than usual. Streamflow is forecast to be below average during spring and summer months even if precipitation is about average over the next seven months.

For more information contact your local Soil Conservation Service office.

MADISON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MADISON RIVER near Grayling 2	APR-JUL	390.0	340.0	87	418.0	107	260.0	67
	APR-SEP	499.0	435.0	87	535.0	107	335.0	67
MADISON RIVER near McAllister 2	APR-JUL	680.0	565.0	83	715.0	105	415.0	61
	APR-SEP	856.0	705.0	82	890.0	104	515.0	60

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
ENNIS LAKE	41.0	31.3	29.9	34.4
HEBGEN LAKE	377.5	274.2	282.1	242.1

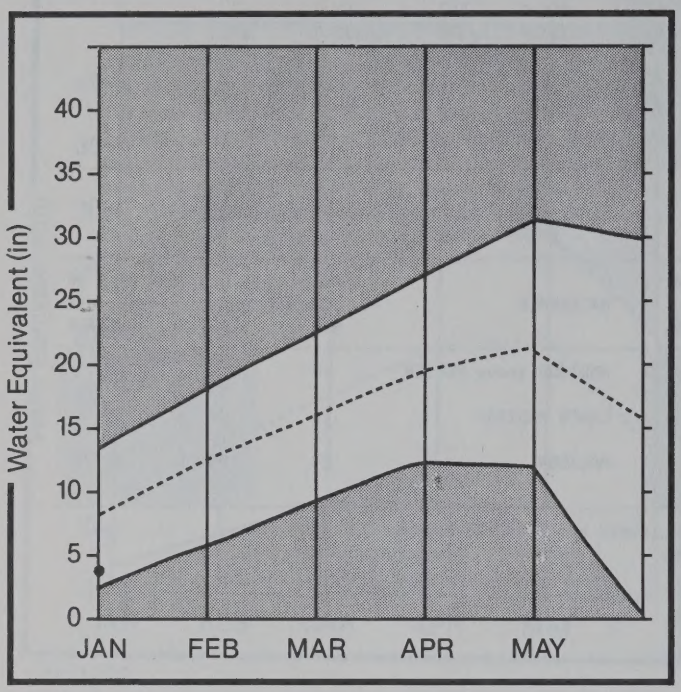
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
MADISON above HEBGEN	14	119	64
LOWER MADISON	10	80	57
MADISON	24	100	61

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Gallatin Basin

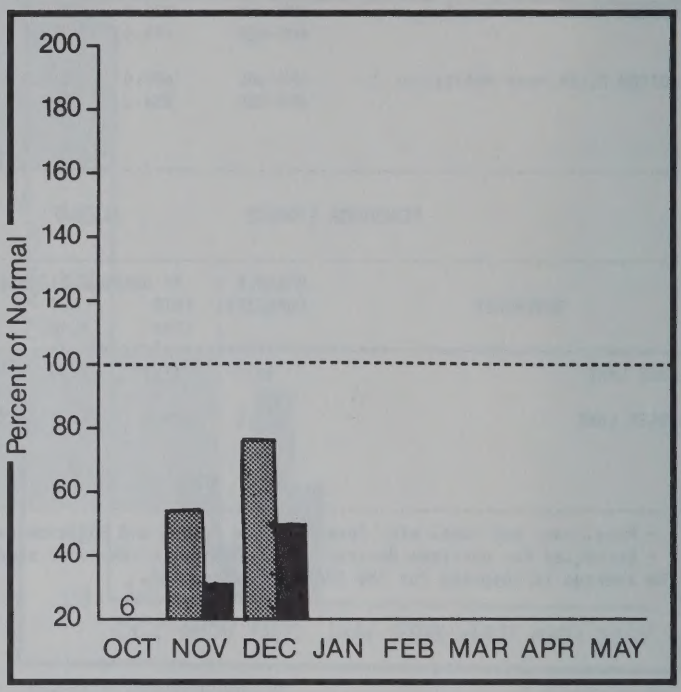
Mountain snowpack* (inches)



*Gallatin

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation was about 75 percent of average for December. Total precipitation since October 1 was about 50 percent of average. Snowpack in the Gallatin and Madison Ranges is about one-half of average and a little lower in the Bridger Range and the mountains south of Bozeman. Soils under the snowpack are drier than usual due to a dry fall. Spring and summer streamflow is forecast to be below average based on current snowpack and assuming near average precipitation through July.

For more information contact your local Soil Conservation Service office.

GALLATIN RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
GALLATIN RIVER near Gateway	APR-JUL	460.0	340.0	74	442.0	96	240.0	52
	APR-SEP	540.0	395.0	73	515.0	95	275.0	51
E & W FK. HYALITE CR. nr Bozeman 2	APR-JUL	24.0	17.1	72	25.0	104	12.0	50
	APR-SEP	28.0	20.0	71	26.0	93	14.0	50
HYALITE CREEK near Bozeman 2	APR-JUL	38.0	27.0	71	40.0	105	18.0	47
	APR-SEP	44.0	31.0	70	42.0	95	20.0	45
GALLATIN RIVER at Logan	APR-JUL	528.0	370.0	70	530.0	100	210.0	40
	APR-SEP	616.0	430.0	70	615.0	100	245.0	40

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MIDDLE CREEK	8.0	7.3	4.5	3.1

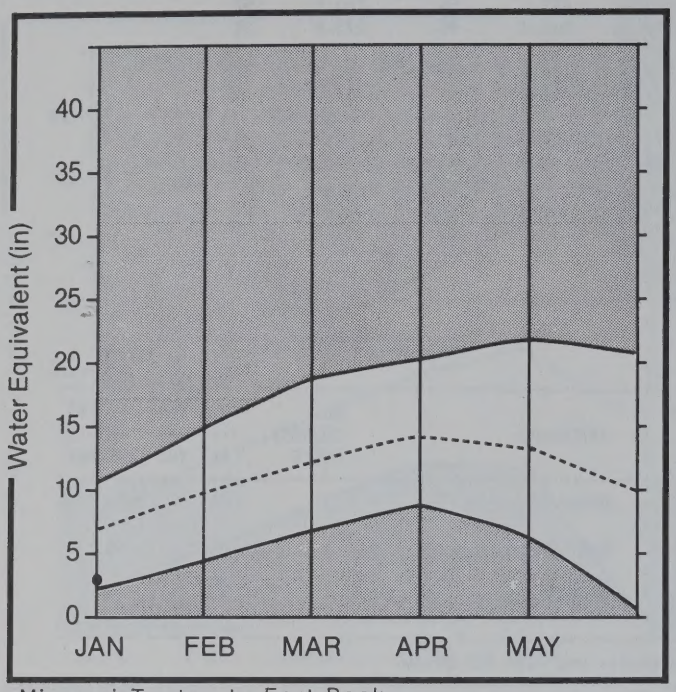
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
UPPER GALLATIN	10	74	51
EAST GALLATIN	11	66	46
GALLATIN	18	73	50

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Missouri Basin

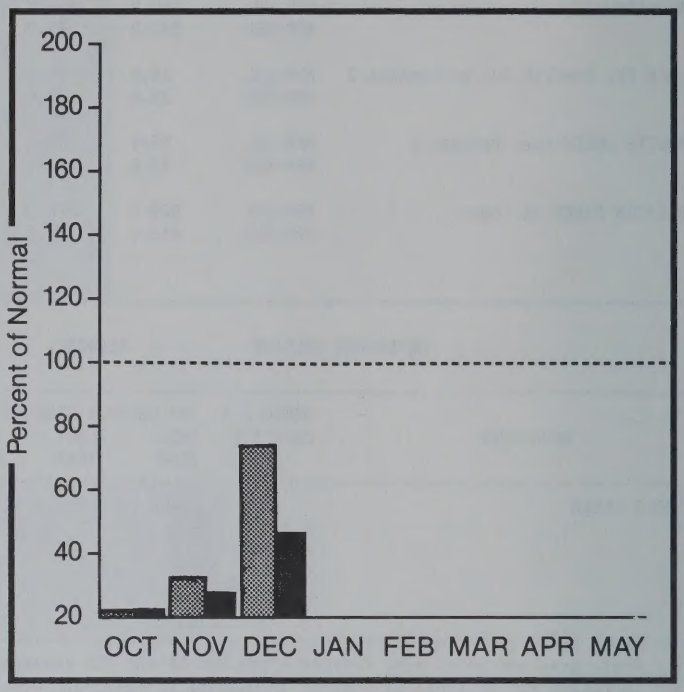
Mountain snowpack* (inches)



*Missouri Toston to Fort Peck

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Since October 1, the total amount of mountain precipitation was a little less than one-half average. December received a little more moisture but only 75 percent of average. Snowpack in the Missouri headwaters is about 60 percent of average. Missouri River tributaries have about 40 to 45 percent of average snowpack. Soils are dry under the snowpack. Streamflow during April through September is forecast to be below average assuming precipitation near average over the next seven months.

For more information contact your local Soil Conservation Service office.

MISSOURI RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MISSOURI RIVER at Toston 2	APR-JUL	2250.0	1610.0	72	2500.0	111	940.0	42
	APR-SEP	2590.0	1910.0	74	2875.0	111	1090.0	42
SHEEP CREEK nr White Sulphur Spgs.	APR-JUL	18.8	12.1	64	21.0	112	4.0	21
	APR-SEP	22.0	14.2	65	24.0	109	4.0	18
BELT CREEK near Monarch	APR-JUL	123.0	76.0	62	90.0	73	25.0	20
	APR-SEP	134.0	82.0	61	136.0	101	28.0	21
MISSOURI RIVER at Fort Benton 2	APR-JUL	3470.0	2400.0	69	3990.0	115	1390.0	40
	APR-SEP	3990.0	2790.0	70	4710.0	118	1680.0	42
MISSOURI RIVER at Virgelle 2	APR-JUL	3960.0	2810.0	71	4950.0	125	1780.0	45
	APR-SEP	4500.0	3190.0	71	5760.0	128	2030.0	45
MISSOURI RIVER near Landusky 2	APR-JUL	4310.0	3000.0	70	5600.0	130	1920.0	45
	APR-SEP	4900.0	3520.0	72	6470.0	132	2200.0	45
N.F. MUSSELSHELL near Delpine	APR-JUL	5.6	3.5	63	6.0	107	1.0	18
	APR-SEP	6.4	4.1	64	7.0	109	1.0	16
S.F. MUSSELSHELL above Martinsdale	APR-JUL	57.0	34.0	60	53.0	93	9.0	16
	APR-SEP	61.0	38.0	62	65.0	107	11.0	18
MISSOURI RIVER below Fort Peck 2	APR-JUL	4260.0	2980.0	70	5620.0	132	1830.0	43
	APR-SEP	4800.0	3390.0	71	6480.0	135	2060.0	43
LAKE SAKAKAWEA Inflow 2	APR-JUL	11000.0	8150.0	74	13200.0	120	4650.0	42
	APR-SEP	12200.0	9030.0	74	14700.0	120	5100.0	42

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CANYON FERRY LAKE	2043.0	1526.0	1682.0	1719.0
HELENA VALLEY	9.2	6.2	5.4	5.7
LAKE HELENA	10.4	10.9	10.9	10.3
HAUSER & HELENA	61.9	63.1	63.1	61.4
HOLTER LAKE	81.9	81.0	81.4	75.8
SMITH RIVER	10.6	2.4	6.9	6.4
NEWLAN CREEK	12.4	8.8	11.2	8.8
BAIR	7.0	1.9	6.4	3.8
MARTINSDALE	23.1	3.1	12.1	9.8
DEADMAN'S BASIN	72.2	35.8	50.6	42.6
FORT PECK LAKE*	18.9	15.3	16.2	15.4

*Millon Acre Feet

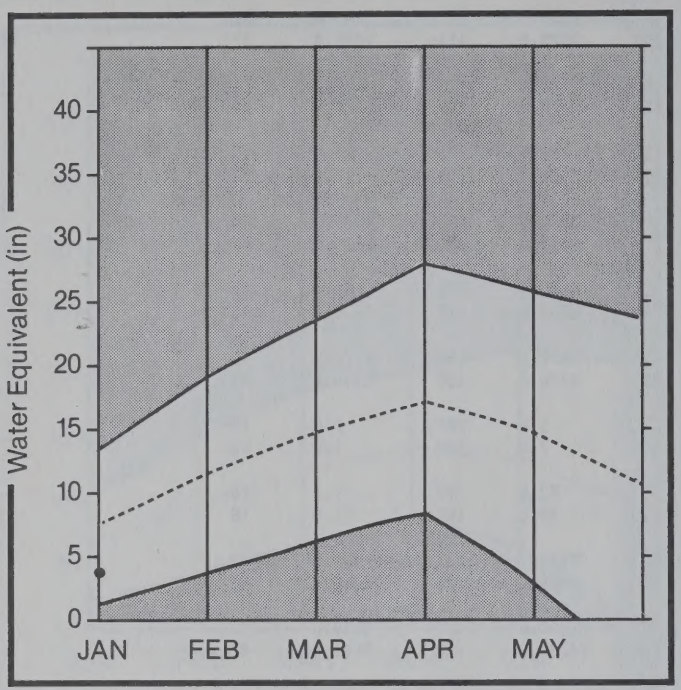
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MISSOURI HEADWATERS	76	96	59
WEST SIDE MISSOURI	9	61	50
SMITH-BELT	7	71	43
MISSOURI MAINSTEM	16	66	46
SUN-TETON-MARIAS	12	51	50
JUDITH-MUSSELSHELL	11	70	37
MISSOURI above FORT PECK	102	83	55
MILK HEADWATERS	5	37	35
BEAR PAW	7	143	65
MILK RIVER	12	50	42
MISSOURI in MONTANA	111	82	54
MISSOURI blw YELLOWSTONE	155	77	55

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Sun, Teton and Marias Basins

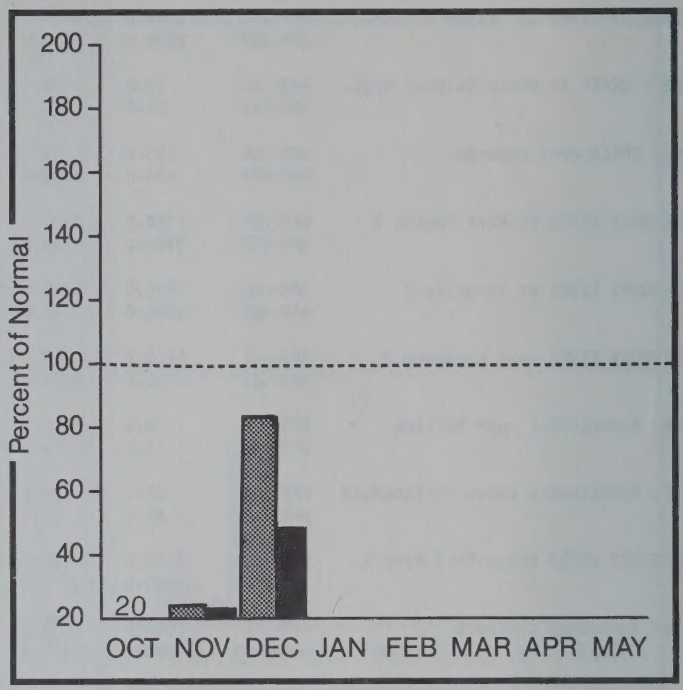
Mountain snowpack* (inches)



*Sun-Teton-Marias

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack is about one-half of average. Since October 1 mountain precipitation has totaled 50 percent of average even though December moisture was about 80 percent of average. Soils under the snow are drier than usual. Spring and summer streamflow is expected to be a little below average if precipitation over the next seven months is about average.

For more information contact your local Soil Conservation Service office.

SUN-TETON-MARIAS RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
SUN RIVER at Gibson Dam 2	APR-JUL	494.0	370.0	75	486.0	98	230.0	47
	APR-SEP	542.0	410.0	76	560.0	103	260.0	48
TWO MEDICINE CREEK near Browning 2	APR-JUL	222.0	170.0	77	273.0	123	80.0	36
	APR-SEP	235.0	180.0	77	270.0	115	90.0	38
BADGER CREEK near Browning	APR-JUL	107.0	84.0	79	133.0	124	40.0	37
	APR-SEP	123.0	98.0	80	145.0	118	50.0	41
SWIFT RESERVOIR Inflow nr Dupuyer	APR-JUL	70.0	50.0	71	88.0	126	22.0	31
	APR-SEP	82.0	58.0	71	89.0	109	27.0	33
CUT BANK CREEK at Cut Bank	APR-JUL	92.0	72.0	78	113.0	123	35.0	38
	APR-SEP	100.0	78.0	78	115.0	115	40.0	40
MARIAS RIVER near Shelby	APR-JUL	478.0	335.0	70	515.0	108	150.0	31
	APR-SEP	501.0	360.0	72	550.0	110	170.0	34

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GIBSON	99.1	47.5	46.2	39.6
PISHKUN	32.0	18.3	19.4	18.4
WILLOW CREEK	32.2	23.5	26.8	20.1
LOWER TWO MEDICINE LAKE	11.9	10.3	11.9	7.4
FOUR HORNS LAKE	19.2	13.7	13.6	12.2
SWIFT	30.0	22.5	15.9	12.0
LAKE FRANCES	112.0	94.1	83.8	68.6
LAKE ELWELL (TIBER)	1347.0	722.0	727.4	562.8

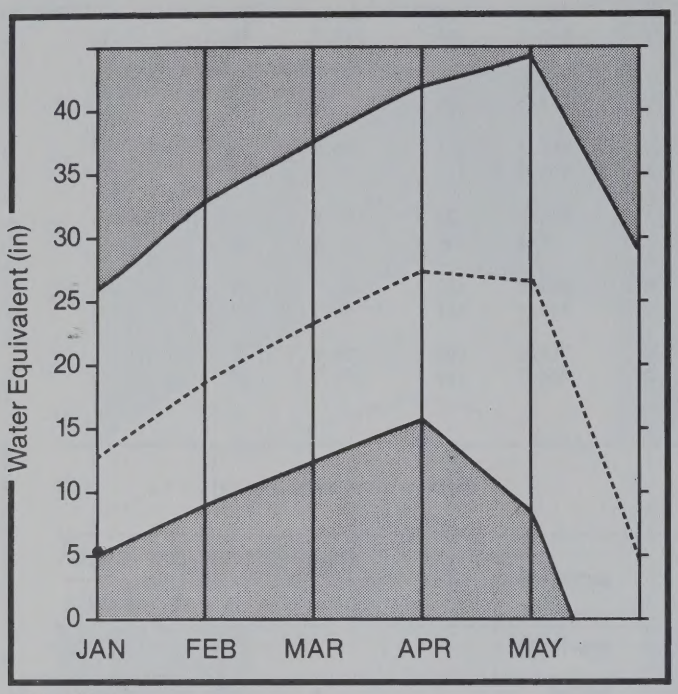
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
SUN-TETON	6	54	51
MARIAS	6	50	50
SUN-TETON-MARIAS	12	51	50

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

St. Mary and Milk Basins

Mountain snowpack* (inches)



*St. Mary

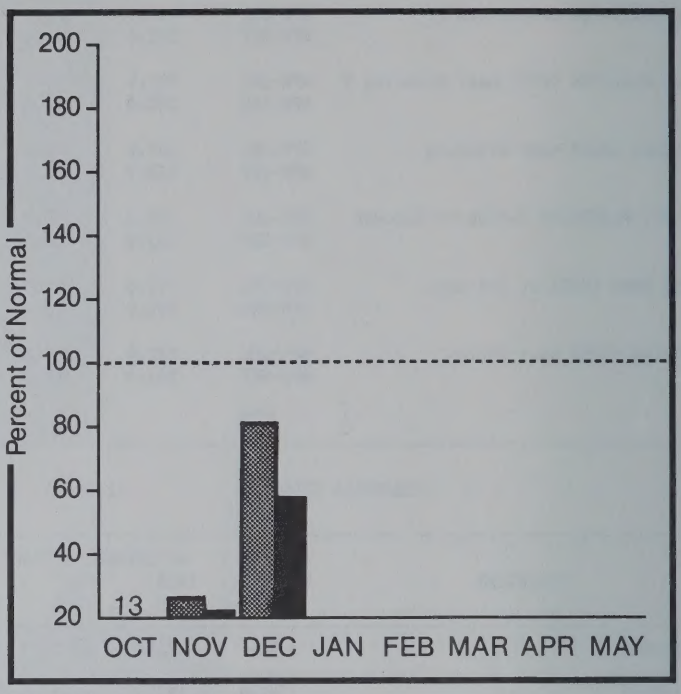
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

December mountain precipitation was about 80 percent of average. However, since October 1, total precipitation is only about 50 percent of average. Watershed soils are drier than usual. Snowpack in the Bear Paw Mountains is about 65 percent of average while the Milk and St. Mary River headwaters have 35 to 40 percent of average snowpack. If precipitation for the next seven months is near average, streamflows during the spring and summer months are forecast to be below average.

For more information contact your local Soil Conservation Service office.

ST. MARY and MILK RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
SWIFTCURRENT CREEK at Sherburne 2	APR-JUL	110.0	89.0	81	123.0	112	60.0	55
	APR-SEP	128.0	105.0	82	138.0	108	72.0	56
ST. MARY RIVER near Babb 2	APR-JUL	404.0	320.0	79	400.0	99	240.0	59
	APR-SEP	474.0	380.0	80	475.0	100	285.0	60
MILK RIVER at Eastern Crossing	MAR-SEP	97.0	65.0	67	123.0	127	44.0	45

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE SHERBURNE	64.3	35.8	38.0	18.8
FRESNO	127.0	64.0	63.2	53.5
BEAVER CREEK	3.5	2.8	2.4	1.8
NELSON	66.8	47.1	47.9	38.9

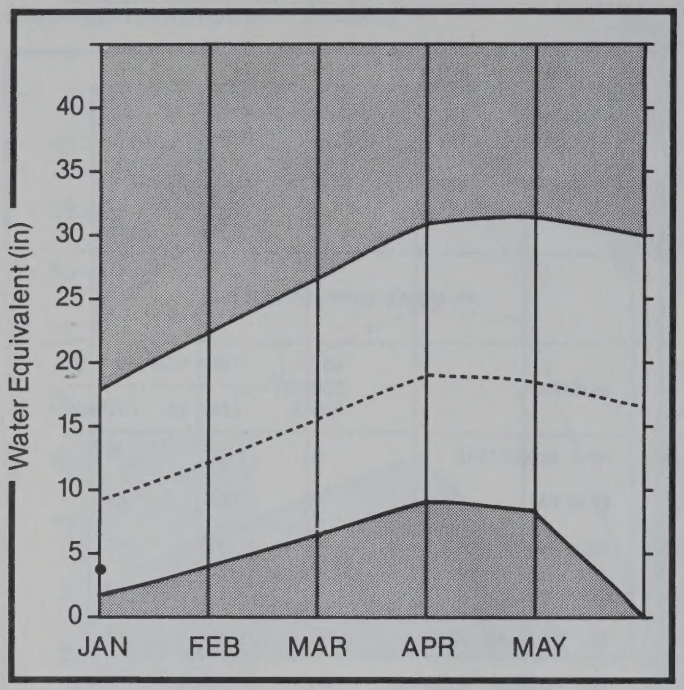
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MILK HEADWATERS	5	37	35
BEAR PAW	7	143	65
MILK RIVER	12	50	42
ST. MARY	6	42	40
ST. MARY and MILK	13	51	45
BOW RIVER in ALBERTA	0	0	0
OLDMAN RIVER in ALBERTA	0	0	0

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Yellowstone Basin

Mountain snowpack* (inches)



*Yellowstone above Big Horn

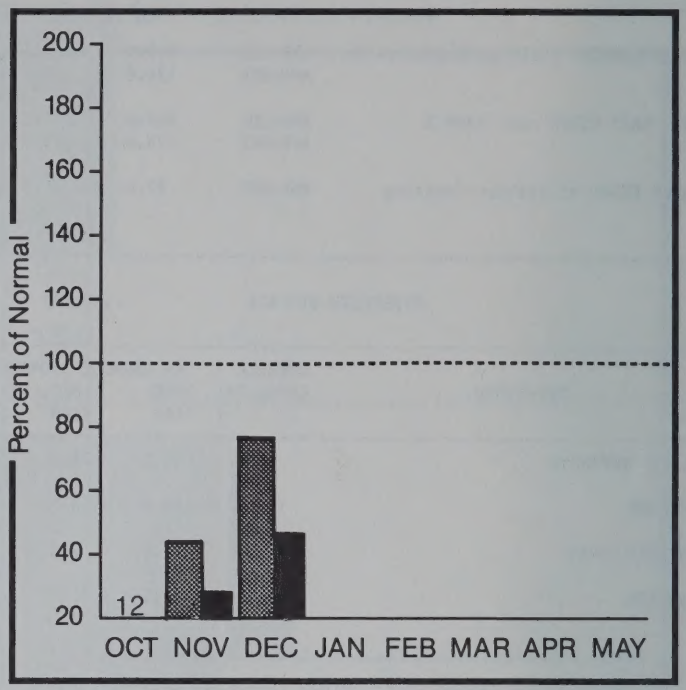
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain precipitation for December was 75 to 80 percent of average over the drainage. The total amount of moisture accumulated since October 1 is about 45 percent of average. Due to the very dry fall, soils under the snowpack are drier than normal. Most drainages have 45 to 50 percent of average snowpack except the Shields River which has about 35 percent of average. Based on current snowpack, low soil moisture, and average precipitation for the next seven months, spring and summer streamflows are forecast to be below average.

For more information contact your local Soil Conservation Service office.

YELLOWSTONE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
YELLOWSTONE at Lake Outlet	APR-JUL	590.0	420.0	71	525.0	89	315.0	53
	APR-SEP	818.0	600.0	73	849.0	104	450.0	55
YELLOWSTONE at Corwin Springs	APR-JUL	1650.0	1190.0	72	1520.0	92	860.0	52
	APR-SEP	2000.0	1440.0	72	1840.0	92	1040.0	52
YELLOWSTONE near Livingston	APR-JUL	1920.0	1340.0	70	1725.0	90	960.0	50
	APR-SEP	2330.0	1630.0	70	2100.0	90	1165.0	50
BOULDER RIVER at Big Timber	APR-JUL	353.0	270.0	76	396.0	112	170.0	48
	APR-SEP	384.0	295.0	77	405.0	105	185.0	48
STILLWATER RIVER nr Absarokee 2	APR-JUL	524.0	390.0	74	643.0	123	200.0	38
	APR-SEP	625.0	475.0	76	700.0	112	250.0	40
CLARKS FORK RIVER near Belfry	APR-JUL	540.0	390.0	72	652.0	121	205.0	38
	APR-SEP	603.0	445.0	74	650.0	108	240.0	40
COONEY RESERVOIR Inflow	APR-JUL	49.0	36.0	73	54.0	110	18.0	37
	APR-SEP	60.0	45.0	75	67.0	112	23.0	38
YELLOWSTONE RIVER at Billings	APR-JUL	3740.0	2750.0	74	3590.0	96	1910.0	51
	APR-SEP	4410.0	3260.0	74	4230.0	96	2250.0	51
YELLOWSTONE RIVER at Miles City 2	APR-JUL	5640.0	4290.0	76	6200.0	110	2540.0	45
	APR-SEP	6510.0	4990.0	77	7100.0	109	2930.0	45
YELLOWSTONE RIVER near Sidney 2	APR-JUL	6260.0	4750.0	76	6900.0	110	2630.0	42
	APR-SEP	7200.0	5460.0	76	7930.0	110	3030.0	42

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MYSTIC LAKE	21.0	7.6	7.8	12.5
COONEY	27.4	19.8	15.0	13.3
BIGHORN LAKE	1356.0	904.2	871.0	730.1
TONGUE RIVER		NO REPORT		

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
YELLOWSTONE ab LIVINGSTON	15	68	49
SHIELDS	7	55	36
BOULDER-STILLWATER	3	54	50
CLARK'S FORK-ROCK CREEK	13	57	44
YELLOWSTONE above BIGHORN	29	60	43
LITTLE BIGHORN	2	88	68
WIND RIVER (Wyoming)	13	72	82
BIGHORN RIVER (Wyoming)	16	67	57
BIGHORN BASIN (Total)	25	68	64
TONGUE RIVER (Wyoming)	6	83	70
POWDER RIVER (Wyoming)	7	97	59
YELLOWSTONE RIVER	57	66	54

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Snow Data Measurements

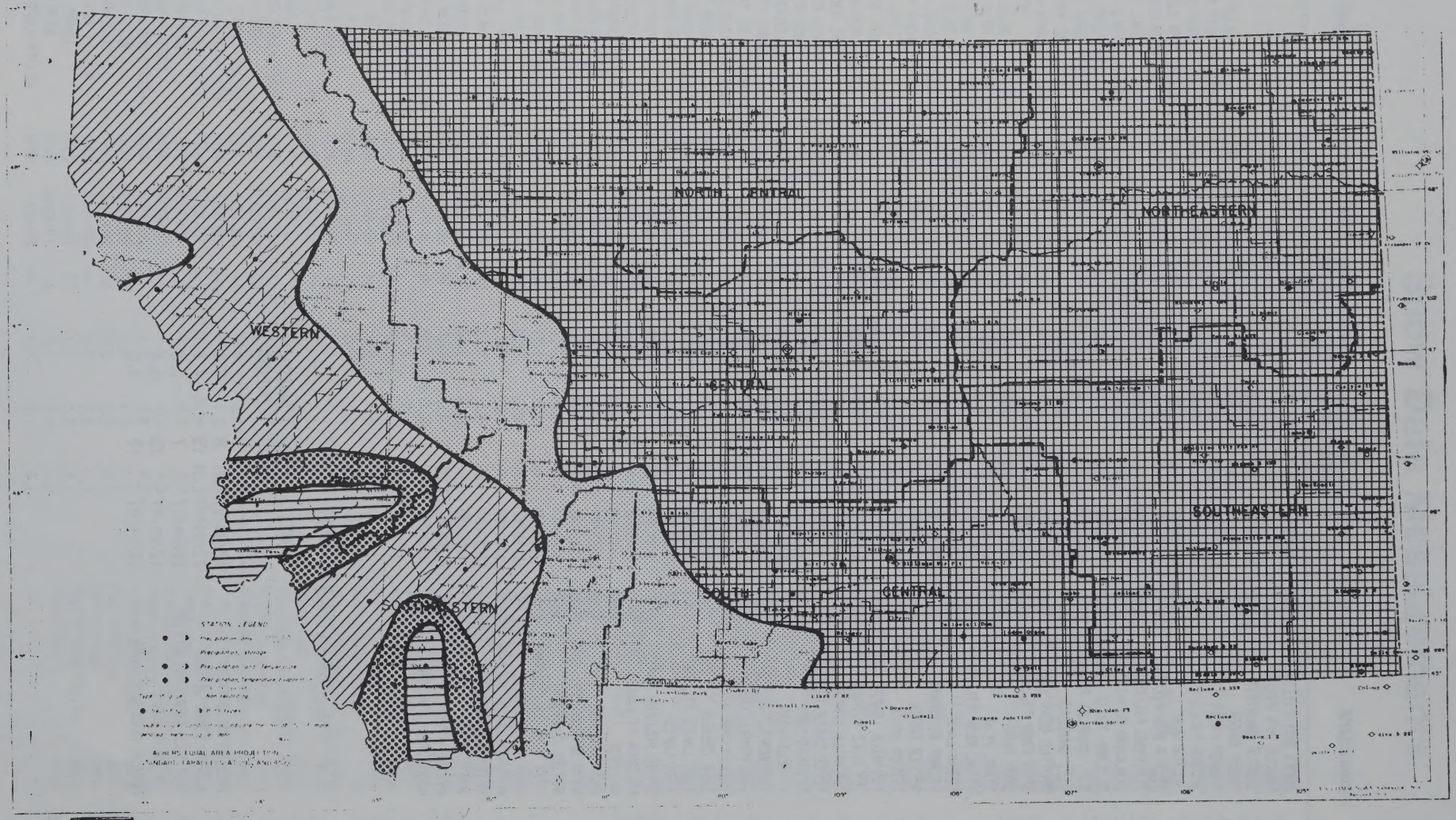
SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
MONTANA						
ARCH FALLS	7350	12/29/87	14	2.6	3.0	5.3
BADGER PASS PILLOW	6900	1/01/88	---	8.2	14.5	15.5
BADGER PASS	6900	12/28/87	39	11.5	20.5	20.0
BANFIELD MTN PILLOW	5600	1/01/88	---	6.3	8.4	9.4
BANFIELD MOUNTAIN	5600	12/27/87	20	4.4	9.9	11.6
BARKER LAKES	8250	12/31/87	20	3.7	5.4	7.5
BARKER LAKES PILLOW	8250	1/01/88	---	4.3	6.4	7.7
BASIN CREEK PILLOW	7180	1/01/88	---	2.2	2.6	3.7
BEAGLE SPGS PILLOW	8850	1/01/88	---	2.4	3.0	3.7
BEAR PAW SKI AREA	5200	12/28/87	11	2.2	1.4	2.7
BEAVER CREEK PILLOW	7850	1/01/88	---	5.3	5.0	8.7
BIG SKY	7700	12/28/87	20	3.6	5.8	6.9
BLACK BEAR	7950	12/30/87	53	13.4	8.4	17.6
BLACK BEAR PILLOW	7950	1/01/88	---	12.6	10.4	16.8
BLACK PINE PILLOW	7100	1/01/88	---	4.1	3.9	5.8
BLACK PINE	7100	12/29/87	16	3.1	2.8	4.9
BLOODY DICK PILLOW	7550	1/01/88	---	4.2	4.1	6.3
BLOODY DICK	7600	1/06/88	20	4.2	3.2	6.8
BLUE LAKE	5900	12/28/87	22	5.0	10.0	10.8
BOULDER MTN PILLOW	7950	1/01/88	---	4.7	7.3	10.0
BOX CANYON PILLOW	6700	1/01/88	---	2.8	4.1	4.3
BOXELDER CREEK	5100	12/28/87	11	2.5	3.2	4.6
BRIDGER BOWL PILLOW	7250	12/30/87	---	4.7	7.2	11.3
BRIDGER BOWL	7250	12/30/87	21	4.9	7.4	11.2
BULL MOUNTAIN	6600	12/30/87	10	1.6	3.0	2.4
CALVERT CREEK	6430	1/06/88	18	3.6	2.9	5.5
CALVERT CR PILLOW	6430	1/01/88	---	3.2	2.4	4.6
CARROT BASIN PILLOW	9000	1/01/88	---	7.0	9.5	12.8
CARROT BASIN	9000	12/31/87	35	8.4	10.3	16.1
CASHE CREEK PILLOW	7800	1/01/88	---	3.6	3.3	4.2
CHESSMAN RESERVOIR	6200	12/29/87	5	.6	2.2	1.5
CLOVER MDW PILLOW	8800	1/01/88	---	5.2	7.2	8.2
COLE CREEK	7850	12/28/87	16	2.6	8.7	8.5
COLE CREEK PILLOW	7850	1/01/88	---	3.5	9.0	7.8
COMBINATION	5600	12/29/87	9	1.4	1.8	2.2
COMBINATION PILLOW	5600	1/01/88	---	2.1	1.8	2.6
COPPER BOTTOM PILLOW	5200	1/01/88	---	3.3	4.4	6.3
COPPER CAMP PILLOW	6950	1/01/88	---	7.4	9.8	16.2
COYOTE HILL	4200	12/31/87	14	2.8	3.2	4.3
CRYSTAL LAKE PILLOW	6050	1/01/88	---	3.7	3.0	6.5
DAISY PEAK	7600	12/28/87	10	1.6	2.8	5.8
DALY CREEK	5780	12/27/87	16	2.6	3.3	5.0
DALY CREEK PILLOW	5780	1/01/88	---	3.3	4.7	5.3
DARKHORSE LK. PILLOW	8700	1/01/88	---	7.1	9.7	12.3
DEADMAN CR PILLOW	6450	1/01/88	---	2.4	2.8	4.8
DEADMAN CREEK	6450	12/29/87	13	2.3	3.0	5.1
DESERT MOUNTAIN	5600	12/28/87	12	3.0	4.8	7.0
DEVILS SLIDE	8100	12/29/87	19	3.7	7.2	10.0
DISCOVERY BASIN	7050	12/29/87	17	2.6	3.3	4.8
DIVIDE PILLOW	7800	1/01/88	---	3.2	2.1	4.8
DIX HILL	6400	12/27/87	14	2.4	3.9	5.4
DUPUYER CREEK PILLOW	5750	1/01/88	---	1.3	4.5	5.1
EMERY CREEK	4350	12/28/87	18	4.8	--	7.8
EMERY CREEK PILLOW	4350	1/01/88	---	3.9	5.9	7.9
FISHER CREEK PILLOW	9100	1/01/88	---	8.3	11.3	16.2
FLATTOP MTN PILLOW	6300	1/01/88	---	11.2	20.9	21.3
FLEECER RIDGE	7500	12/30/87	16	3.2	4.0	4.7
FROHNER MEADOWS	6480	12/29/87	9	1.5	3.1	3.9
FROHNER MDWS PILLOW	6480	1/01/88	---	1.3	3.2	4.2
GARVER CREEK	4250	12/27/87	17	3.3	4.3	5.6
GIBBONS PASS	7100	12/30/87	30	5.9	5.2	9.7
GRAVE CRK PILLOW	4300	1/01/88	---	3.8	7.2	8.7
GRAVE CREEK	4300	12/28/87	17	4.2	7.6	8.2
HAND CREEK	5030	12/29/87	16	3.6	3.4	5.9
HAND CREEK PILLOW	5030	1/01/88	---	2.9	3.7	6.4
HAWKINS LAKE PILLOW	6450	1/01/88	---	8.8	10.8	12.8
HAWKINS LAKE	6450	12/27/87	35	9.5	12.6	15.4
HEART LAKE TRAIL	4800	12/31/87	28	5.0	6.7	9.2
HEBGEN DAM	6550	12/31/87	20	2.6	2.0	5.0
HELL ROARING DIVIDE	5770	12/30/87	30	7.4	9.1	13.6
HOLBROOK	4530	12/26/87	9	2.0	3.0	4.0
HOOD MEADOW	6600	12/29/87	15	2.6	2.4	4.9
HOODOO BASIN PILLOW	6050	1/01/88	---	11.2	15.1	20.3
HOODOO BASIN	6050	12/31/87	49	13.0	17.8	21.5
HOODOO CREEK	5900	12/31/87	40	9.8	14.6	19.1
JOHNSON PARK	6450	12/28/87	8	1.2	2.1	3.7
KINGS HILL	7500	12/29/87	14	2.8	3.2	6.6
KIWANIS CAMP	3720	12/28/87	6	.6	.0	1.1
KRAFT CREEK PILLOW	4750	1/01/88	---	3.1	5.3	5.7
LAKEVIEW CANYON	6930	12/29/87	12	1.3	1.0	5.4
LAKEVIEW RDG. PILLOW	7400	1/01/88	---	2.7	1.7	6.4
LAKEVIEW RIDGE	7400	12/29/87	12	1.2	.8	4.8
LEMHI RIDGE	8100	1/05/88	19	3.9	3.6	4.5
LEMHI RIDGE PILLOW	8100	1/01/88	---	3.5	3.5	4.9
LICK CREEK PILLOW	6860	1/01/88	---	3.4	3.8	4.1
LICK CREEK	6860	12/29/87	15	2.5	3.4	4.2
LONE MOUNTAIN	8880	12/28/87	24	5.0	7.6	10.4
LOST HORSE	5940	12/29/87	31	8.2	8.7	13.2
LOWER TWIN PILLOW	7900	1/01/88	---	4.9	8.9	10.1
LUBRECHT FLUME	4680	12/31/87	9	1.6	2.5	2.7
LUBRECHT PILLOW	4680	1/01/88	---	2.3	2.5	2.5
LUBRECHT FOREST NO 3	5450	12/28/87	8	1.3	2.3	2.7
LUBRECHT FOREST NO 4	4650	12/28/87	5	.7	1.0	1.5
LUBRECHT FOREST NO 6	4040	12/28/87	5	.8	1.7	1.7
LUBRECHT HYDROPLOT	4200	12/31/87	12	1.5	2.6	3.2
MADISON PLT PILLOW	7750	12/30/87	---	7.1	6.1	10.6
MADISON PLATEAU	7750	12/30/87	34	7.5	5.0	9.3
MANY GLACIER	4900	12/28/87	10	1.7	7.8	9.6
MANY GLACIER PILLOW	4900	1/01/88	---	1.8	7.4	9.4
MARIAS PASS	5250	12/30/87	14	2.6	7.3	7.1
MAYNARD CREEK	6210	12/30/87	12	2.6	4.8	6.1
MAYNARD CR PILLOW	6210	12/30/87	---	1.8	3.5	5.2
MONUMENT PK PILLOW	8850	1/01/88	---	3.5	6.6	9.6
MOSS PEAK PILLOW	6780	1/01/88	---	8.0	14.6	17.9
MT LOCKHART PILLOW	6400	1/01/88	---	5.4	9.2	9.2
MOUNT LOCKHART	6400	1/02/88	24	5.4	8.6	8.8
MULE CREEK PILLOW	8300	1/01/88	---	4.3	6.1	5.7
NEVADA CREEK PILLOW	6480	1/01/88	---	3.0	4.4	5.2
NEZ PERCE CMP PILLOW	5650	1/01/88	---	4.5	4.4	6.7
NEZ PERCE CAMP	5650	12/30/87	22	3.8	3.8	6.5
NEZ PERCE PASS	6570	12/30/87	21	4.1	4.0	7.1
NOISY BASIN	6040	12/28/87	35	9.4	13.8	19.5
NOISY BASIN PILLOW	6040	1/01/88	---	9.2	12.2	17.4
N.F. ELK CR PILLOW	6250	1/01/88	---	3.0	4.8	5.0
N.F. ELK CREEK	6250	12/31/87	14	2.6	4.0	5.3
NORTH FORK JOCKO	6330	12/31/87	34	9.7	13.4	18.7
N.E. ENTRANCE PILLOW	7350	1/01/88	---	2.2	2.5	4.1
NORTHEAST ENTRANCE	7350	12/31/87	11	1.6	2.6	3.8
OPHIR PARK	7150	12/27/87	18	3.7	6.2	7.3
PETERSON MDW PILLOW	7200	12/28/87	---	2.7	3.6	4.8
PETERSON MEADOWS	7200	12/28/87	15	2.6	3.6	4.6
PICKFOOT CRK PILLOW	6650	1/01/88	---	2.4	5.6	4.5
PIKE CREEK	5930	12/28/87	22	5.0	12.4	11.0
PIKE CREEK PILLOW	5930	1/01/88	---	6.2	12.3	12.3
PIPESTONE PASS	7200	12/28/87	7	1.2	2.2	2.2
PLACER BASIN PILLOW	8830	1/01/88	---	4.7	9.6	8.0
POORMAN CREEK	5100	1/01/88	---	8.0	13.8	15.5
PORCUPINE PILLOW	6500	1/01/88	---	.8	1.8	3.3
RED MOUNTAIN	6000	12/29/87	21	3.6	--	8.7
ROCKER PEAK	8000	12/30/87	17	3.5	4.2	6.6
ROCKER PEAK PILLOW	8000	1/01/88	---	3.2	5.3	6.6
ROCKY BOY	4700	12/28/87	9	2.0	.7	1.7

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
ROCKY BOY PILLOW	4700	12/28/87	---	1.7	1.7	2.5
SADDLE MTN PILLOW	7900	1/01/88	---	7.2	6.8	12.0
SADDLE MOUNTAIN	7940	12/30/87	31	6.4	6.3	11.0
SHORT CREEK	7000	1/04/88	10	1.9	1.8	--
SHOWER FALLS	8100	12/29/87	20	4.2	7.6	10.9
SHOWER FALLS PILLOW	8100	1/01/88	---	5.8	8.3	11.0
SILVER RUN	6630	12/28/87	5	.6	1.8	2.2
SILVER RUN PILLOW	6630	1/01/88	---	1.9	2.2	2.2
SKALKAHO PILLOW	7260	1/01/88	---	7.0	7.8	11.4
SKALKAHO SUMMIT	7250	1/02/88	34	7.2	7.0	11.4
SKYLARK TRAIL PILLOW	6200	1/01/88	---	7.7	11.2	12.5
S.F. SHIELDS PILLOW	8100	1/01/88	---	2.6	5.3	8.3
S.F. SHIELDS	8100	12/28/87	15	3.1	7.0	11.7
SPOTTED BEAR MTN.	7000	1/04/88	18	4.0	5.4	6.9
SPUR PARK PILLOW	8100	1/01/88	---	4.1	5.2	10.6
SPUR PARK	8100	12/29/87	16	3.5	4.2	9.5
STAHL PEAK	6030	12/28/87	34	9.2	22.1	19.4
STAHL PEAK PILLOW	6030	1/01/88	---	8.7	20.5	19.1
STORM LAKE	7780	12/28/87	20	3.4	4.4	5.7
STUART MOUNTAIN	7400	12/31/87	36	10.3	11.8	13.5
SUCKER CREEK	3960	12/28/87	0	.0	.0	.6
TAYLOR ROAD	4080	12/28/87	8	1.0	.0	2.2
TEN MILE LOWER	6600	12/30/87	13	1.6	2.8	3.1
TEN MILE MIDDLE	6800	12/30/87	17	2.8	4.3	4.8
TEN MILE UPPER	8000	12/30/87	16	3.2	4.6	5.8
TEPEE CREEK PILLOW	8000	1/01/88	---	4.7	3.4	6.5
TRINKUS LAKE	6100	1/04/88	43	12.2	12.8	18.0
TV MOUNTAIN	6800	12/31/87	25	4.9	6.4	7.8
TWELVEMILE PILLOW	5600	1/01/88	---	5.7	5.2	7.4
TWELVEMILE CREEK	5600	12/29/87	26	6.2	6.0	8.4
TWENTY-ONE MILE	7150	12/30/87	21	3.8	3.5	7.7
TWIN CREEKS	3580	12/26/87	12	2.5	4.5	5.4
TWIN LAKES PILLOW	6400	1/01/88	---	11.1	12.0	17.7
TWIN LAKES	6510	12/29/87	38	10.8	12.0	17.1
UPPER HOLLAND LAKE	6200	1/04/88	30	8.2	13.0	16.6
WALDRON PILLOW	5600	1/01/88	---	2.9	4.7	4.8
WALDRON	5600	1/02/88	11	1.4	3.8	4.1
WARM SPRINGS	7800	12/29/87	21	4.4	5.6	11.3
WARM SPRINGS PILLOW	7800	1/01/88	---	5.4	7.0	12.5
WEASEL DIVIDE	5450	12/28/87	32	8.6	14.4	17.5
WEST YELL'ST PILLOW	6700	12/30/87	---	2.0	1.7	4.3
WEST YELLOWSTONE	6700	12/30/87	14	2.0	2.0	5.1
WHISKEY CREEK PILLOW	6800	1/01/88	---	4.2	4.2	7.6
WHISKEY CREEK	6800	12/30/87	30	5.1	4.3	7.7
WHITE MILL PILLOW	8700	1/01/88	---	4.8	7.4	11.9
WILLOW CREEK	6500	12/28/87	9	1.1	2.8	3.7
WOOD CREEK PILLOW	5960	1/01/88	---	1.9	3.3	4.0

ADDITIONAL SNOW DATA FOR DECEMBER 1, 1987

SNOW COURSE	DATE	SNOW DEPTH	WATER CONTENT
DESERT MOUNTAIN	12/04/87	8	2.0
NORTH FORK JOCKO	12/04/87	18	4.4
SPOTTED BEAR MOUNTAIN	12/04/87	7	1.4
TRINKUS LAKE	12/04/87	23	6.0
UPPER HOLLAND LAKE	12/04/87	13	3.2

Valley Precipitation



Over 130%

110 - 130%

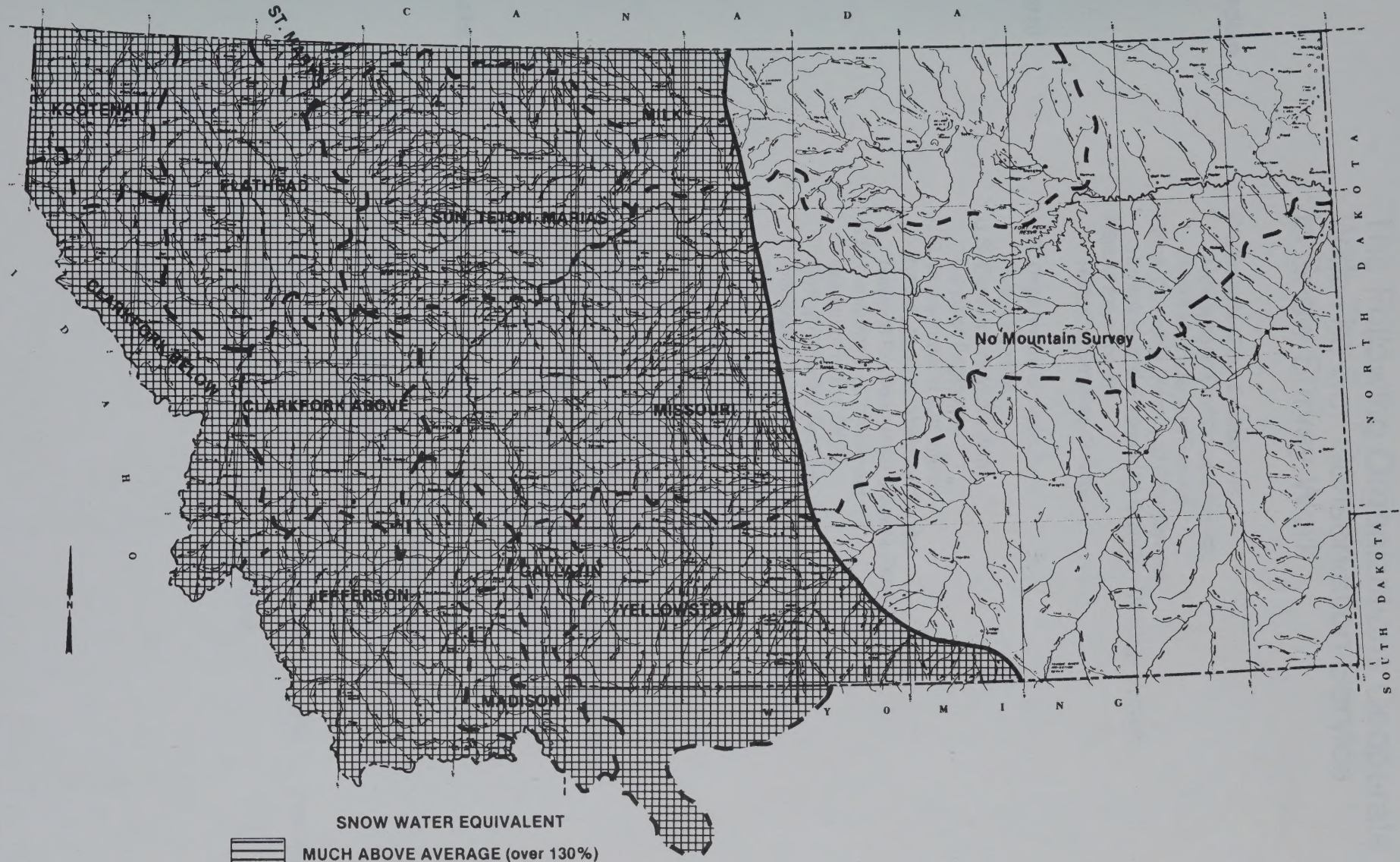
90 - 110%

70 - 90%

Under 70%

DECEMBER 1987

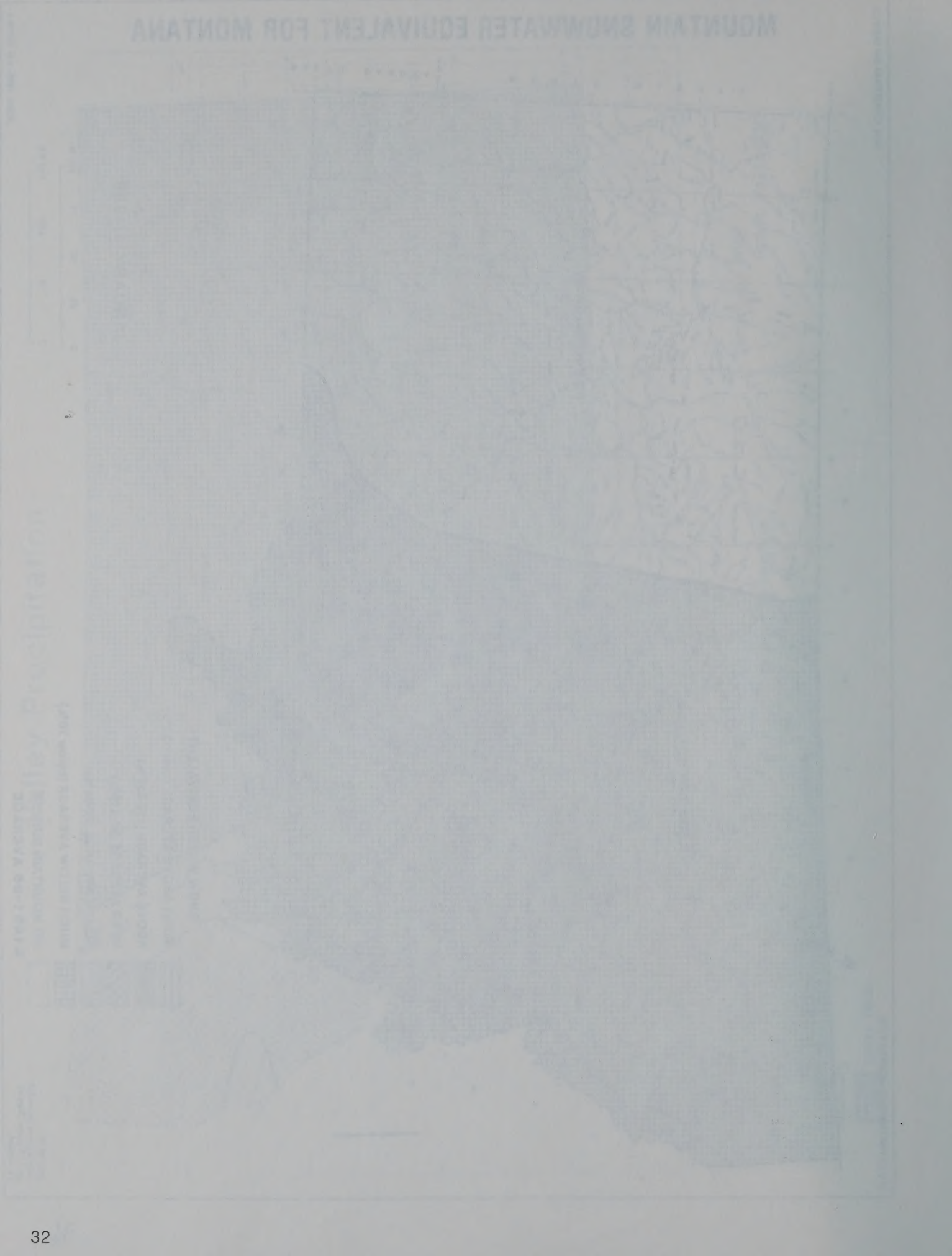
Source: NWS
Great Falls, MT



MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA

SOURCE:
Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-B-39206-1



The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

Canadian

Department of the Environment
- Atmospheric Environment Service
- Water Management Service

British Columbia Ministry of Environment
- Inventory and Engineering Branch, Hydrology Section

Alberta Environment
- Technical Services Division

Federal

U.S. Department of Agriculture
- Forest Service

U.S. Department of the Army
- Corps of Engineers

U.S. Department of Commerce
- NOAA, National Weather Service
- National Environmental Satellite Service

U.S. Department of the Interior
- Bureau of Indian Affairs
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Bureau of Reclamation

U.S. Department of Energy
- Bonneville Power Administration

State

Montana Conservation Districts
Montana Department of Fish, Wildlife, and Parks
Montana Department of Natural Resources and Conservation
Montana Department of State Lands
Montana State University - Agricultural Experiment Station
University of Montana - School of Forestry

Private

Big Sky of Montana
Butte Water Company
Confererated Salish & Kootenai Tribes
Flathead Valley Comminity College
Montana Power Company
Pondera County Canal & Reservoir Company

Other organizations and individuals furnish information for the snow survey reports.
Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
Federal Bldg., Rm. 443
10 East Babcock Street
Bozeman, MT 59715

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